

- d) forming a first electrode in electrical contact with the front-side diffused region; and
- e) forming a second electrode in electrical contact with the back-side diffused region.

45. The method of claim **44**, further comprising depositing an anti-reflective layer on the front side.

46. The method of claim **44**, wherein each nanoparticle of the set of nanoparticles is between about 1 nm and about 100 nm in diameter.

47. A method for producing a device for generating electricity from solar radiation comprising:

- a) preparing a wafer doped with a first dopant, the wafer including a front-side and a back-side, wherein the front-side is configured to be exposed to the solar radiation;
- b) forming a first diffused region on the back-side by applying a first colloidal dispersion including a set of first Group IV nanoparticles in a first pattern on the back-side, wherein the first Group IV nanoparticles are doped with a second dopant, and wherein the second dopant is a counter dopant to the first dopant;
- c) forming a second diffused region on the back-side by applying a second colloidal dispersion including a set of second Group IV nanoparticles in a second pattern on the back-side, wherein the second Group IV nanoparticles are doped with a third dopant, wherein the third

dopant is a counter dopant to the second dopant, and wherein the first pattern is interdigitated with the second pattern;

forming a first electrode in electrical contact with the first diffused region; and

forming a second electrode in electrical contact with the second diffused region.

48. The method of claim **47**, further comprising deposition an anti-reflective layer on the front side, wherein the anti-reflective layer passivates the front-side.

49. The method of claim **47**, wherein the first pattern and the second pattern includes lines.

50. The method of claim **47**, wherein the first pattern and the second pattern includes points.

51. The method of claim **47**, wherein each nanoparticle of the first set of nanoparticles and the set of nanoparticles is between about 1 nm and about 100 nm in diameter.

52. The method of claim **47**, wherein each nanoparticle of the first set of nanoparticles and the set of nanoparticles is between about 4 nm and about 20 nm in diameter.

53. The method of claim **47**, further comprising depositing a dielectric layer between the first pattern and the second pattern.

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